## REMARKS

This Amendment is submitted in response to the Non-Final Office Action dated October 21, 2009. Claims 1-13 are pending in the application. Claims 4-6 are rejected under 35 U.S.C. §102, and Claims 7 and 8 are rejected under 35 U.S.C. §103. Claims 1-3 and 9-13, which were previously withdrawn due to a restriction requirement, have been cancelled without prejudice or disclaimer. Claim 7 has also been cancelled without prejudice or disclaimer. Claims 4, 5, 6 and 8 are amended herein. Claim 14 has been newly added. No new matter has been added by way of the amendments or the new claim. The Commissioner is hereby authorized to charge deposit account 02-1818 for any fees which are due and owing. Applicants respectfully submit that the rejections have been overcome, as set forth in detail below.

The Office Action rejected Claims 4-6 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent Appl. Pub. No. 2002/0197516 to Kirino et al. ("Kirino"). Of the rejected claims, Claim 4 is the sole independent claim. Claim 4 has been amended to recite, at least in part, a magnetic recording medium comprising a substrate; an underlying layer in which a large number of recesses of an extremely small size are uniformly demonstrated, the underlying layer being formed on the substrate, wherein the underlying layer is formed of tetraethoxysilane as a feedstock, and the underlying layer is a layer which is formed of silicon oxide and a mixture thereof and in which a large number of spherically-shaped voids of the same size are formed by removing spherically-shaped micelles which are self-arrayed in a face-centered cubic lattice configuration; and an amorphous magnetic film is formed on the surface of said underlying layer in which said recesses of the extremely small size are demonstrated. Support for the amendments can be found, for example, on pages 6 and 7 of the Specification.

Kirino discloses that the magnetic recording medium includes an underlayer formed of an inorganic compound layer, and a magnetic layer formed over the underlayer. The inorganic compound layer as the underlayer has crystal grains and at least one kind of oxide, the crystal grains having as main elements at least one of cobalt oxide, chromium oxide, iron oxide and nickel, the at least one kind of oxide lying as a non-crystalline phase in grain boundaries between the crystal grains and selected from among silicon oxide, aluminum oxide, titanium oxide, tantalum oxide and zinc oxide. However, the underlayer of the inorganic compound film is formed by sputtering method, and a face-centered cubic structure is not formed such as the presently claimed invention.

The sputtering method is used to manufacture a homogeneous thin film. In the related fields of this application, it is used for forming a recording medium layer in the hard disc. In the sputtering method, the atom which is ionized to a target material (material of a film to be made) collides at a high-speed. Ar is usually used as the atom. Then, fine atomic sized materials are flipped out by an impact of the collision (phenomenon of sputtering), and the fine materials that are flipped out "lay-up" on the objective substrate after having flown a certain distance. Generally, the distance is several cm to tens of cm, which is the distance of approximately 100 million times to 1 billion times the size of the atom.

As for a density and a uniformity of a particle in the laying-up layer is formed by sputtering method, the coming flying distribution to a ratio of quantity of each particle and a surface of the each particle is dominant. However, it is impossible physically to control the arrival position of each particle to the regular position with the same scale as the particle. That is, as a result, a regularly ordered structure cannot be formed.

Further, in sputtering method, after the fine particle of size of the atom level has been flipped out from the surface of the target, the fine particle flies the distance of approximately 100 million times to 1 billion times of the atom size, and passes through the complicated dispersion with the sputtering gas atom, and then arrives at the surface of the substrate. Therefore, the arrival position can be treated only in average distribution (theory of probability), and it is impossible to form a structure which is regularly arranged particle by particle on a nano-scale.

In contrast, according to the present claimed invention, a magnetic recording medium comprises an underlying layer formed of tetraethoxysilane as a feedstock, and the underlying layer is a layer which is formed of F68 ($EO_{77}$-$PO_{29}$-$EO_{77}$) or F108 ($EO_{133}$-$PO_{50}$-$EO_{133}$) as a triblock copolymer and in which a large number of spherically-shaped voids of the same size by removing spherically-shaped micelles which are self-arrayed in a face-centered cubic lattice configuration. The presently claimed invention provides a structure that is regularly formed on a nano-scale by using the self organization phenomenon of a different physical mechanism. Kirino fails to disclose or suggest these features.

Moreover, the Kirino forms a consecutive recording layer on a entire surface of the underlayer, and each protuberance does not form non-consecutive protuberances like the amorphous magnetic film in the magnetic recording medium of the presently claimed invention. Accordingly, Kirino fails to disclose a magnetic recording medium comprising amorphous

magnetic films are formed on the surface of the underlying layer in which said recesses of the extremely small size are demonstrated, the amorphous magnetic films are layered independently one another on the each recesses demonstrated in the underlying layer to form protuberances which are discrete with respect to one another, as claimed.

Accordingly, Applicants respectfully request that the 35 U.S.C. §102(b) rejections of Claims 4-6 in view of Kirino be withdrawn.

The Office Action also rejects Claims 7 and 8 under 35 U.S.C. §103(a) as being unpatentable over Kirino as applied to Claim 4 above, and with evidence provided by Wohlfarth, E.P., *Ferromagnetic Materials: A Handbook on the Properties of Magnetically Ordered Substances*, Vol. 2, Amsterdam, New York, Oxford: North-Holland Publishing Co., 1980 ("Wohlfarth"). Wohlfarth is relied on merely for the disclosure of evidence regarding iron oxide having a crystal lattice of a face-centered cubic structure. (See, Office Action, pg. 3). For at least the reasons discussed above, Wohlfarth fails to cure the deficiencies of Kirino, even assuming that the references are properly combinable in the manner suggested in the Office Action. Therefore, Kirino and Wohlfarth fail to render obvious dependent Claims 7 and 8.

Accordingly, Applicants respectfully request that the 35 U.S.C. §103(a) rejection of Claim 8 be withdrawn.

For at least the reasons above, Applicants respectfully submit that the present application is in condition for allowance and earnestly solicit reconsideration of same.

Respectfully submitted,

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